

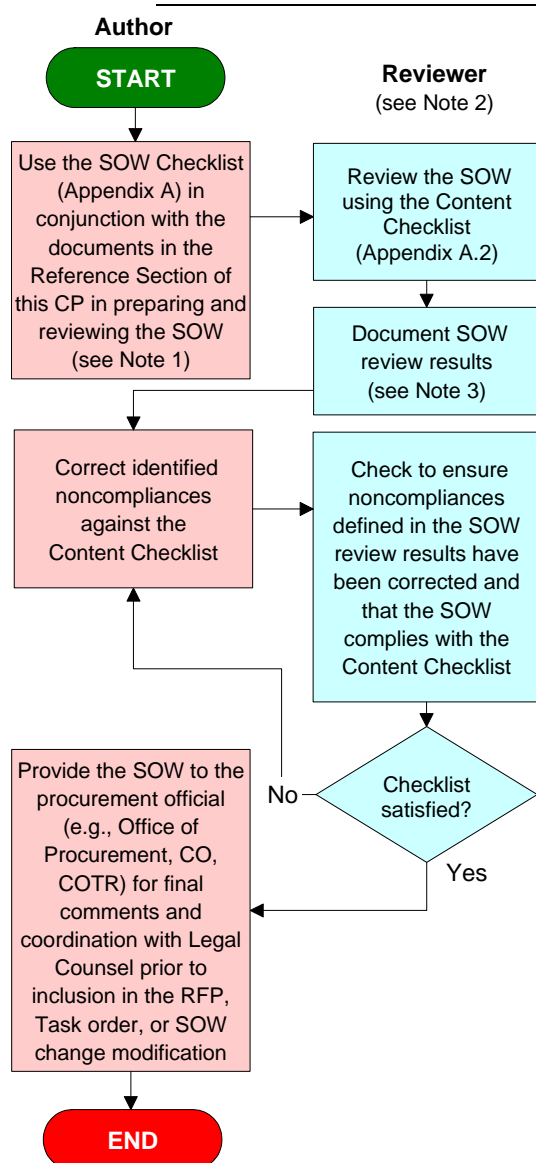
STATEMENT OF WORK (SOW) REVIEW PROCEDURE

- Objectives:**
- Define the process to review SOW requirements (for Requests for Proposals (RFPs), task orders, and changes to existing SOWs).
 - Establish a standard set of SOW quality criteria (documented in the SOW Checklist in Appendix A).
 - Ensure that each SOW undergoes thorough review and update using the SOW Checklist before finalizing the RFP, task order, or SOW change.
 - Ensure that each SOW, when released, is complete, consistent, correct, unambiguous, and verifiable.

- Scope:** This procedure applies to SOWs drafted by LaRC personnel. It applies to SOWs included in solicitations for procurements of products and services that will result in contracts. It applies to:
- the SOW portion of an RFP for new procurements of products or services, using any contract type (e.g., fixed-price, cost reimbursement)
 - the SOW for a task order under an existing task order contract
 - change proposals to existing SOWs.

- Records generated:**
- Evidence that SOW review issues were resolved
 - Updated SOW

Approval: original signed on file Date 7/21/06
Associate Director for Operations



Inputs/Entry Criteria:

- The reviewer has received training or has the experience necessary to be capable of reviewing the draft SOW. It is recommended that the reviewer be knowledgeable in the subject matter of the SOW.

Note 1:

Before leaving this box of the flow diagram:
It is recommended that the entire SOW be thoroughly reviewed by all stakeholders (and the full RFP preparation team if the SOW is to be included in an RFP). To ensure the SOW is correct and complete, the stakeholders should include people with expertise in the subject matter covered (e.g., customers, systems engineers, software engineers, hardware engineers).

Note 2:

Reviewers for each Organizational Unit (OU) are designated by their OU management.

Note 3:

Include the following in the SOW review results:

1. Title of SOW
2. Name of reviewer
3. Date of review
4. Review comments—Include the following for each review comment:
 - a. Identification of SOW paragraph(s)/sentence(s) to which the comment applies
 - b. Documentation of noncompliance against the Content Checklist (Appendix A.2)
 - c. Suggested correction where applicable

Outputs/Exit Criteria:

- The reviewer has recorded the SOW review results.
- The author has updated the SOW in accordance with the reviewer's comments so that the updated SOW satisfies the criteria in the SOW Checklist.
- The author retains evidence that the SOW review issues were resolved.

Appendix A: Statement of Work (SOW) Checklist

Note: Items in gray text are provided as examples and explanatory guidance.

For additional guidance and examples on developing a Statement of Work see:

URL: http://sw-eng.larc.nasa.gov/docs/statements_of_work.html
and LPR 5000.2 "Procurement Initiator's Guide, Section 12 and 13.

A.1 Editorial Checklist

- a. Is the SOW requirement in the form: "**Who**" shall "**Do What**"? E.g., "The Contractor shall (perform, provide, develop, test, analyze, or other verb followed by a description of what)." Example SOW requirements:
 - The Contractor shall design the XYZ flight software...
 - The Contractor shall operate the ABC ground system...
 - The Contractor shall provide maintenance on the following...
 - The Contractor shall report software metrics monthly ...
 - The Contractor shall integrate the PQR instrument with the spacecraft...
- b. Is the SOW requirement a simple sentence that contains only one requirement? Compound sentences that contain more than one SOW requirement need to be split into multiple simple sentences. (For example, "The Contractor shall do ABC and perform XYZ" should be rewritten as: "The Contractor shall do ABC. The Contractor shall perform XYZ.")
- c. Is the SOW composed of simple, cohesive paragraphs, each covering a single topic? Paragraphs containing many requirements should be divided into sub-paragraphs for clarity.
- d. Has each paragraph and subparagraph been given a unique number or letter identifier? Is the numbering / lettering correct?
- e. Is the SOW requirement in the active rather than the passive voice? Passive voice leads to vague statements. (For example, state: "The Contractor shall hold monthly management review meetings..." instead of "Management review meeting shall be held monthly ...")
- f. Is the SOW requirement stated positively as opposed to negatively? (i.e., replace statements such as "The Contractor shall not exceed the budgetary limits specified..." with "The contractor shall comply with the budgetary limits specified...")
- g. Is the SOW requirement grammatically correct?
- h. Is the SOW requirement free of typographic errors, misspellings, and punctuation errors?
- i. Have all acronyms been defined in an Acronym List or spelled out in the first occurrence?
- j. Have the quantities, delivery schedules, and delivery method been identified for each deliverable within the SOW or a separate attachment/section?
- k. Has the content of documents to be delivered been defined in a separate attachment/section and submitted with the SOW?
- l. Has the file format of each electronic deliverable been defined? (e.g., Microsoft – Project, Adobe – Acrobat PDF, National Instruments – Labview VIs)

A.2 Content Checklist

- a. Are correct terms used to define the requirements?
 1. **Shall** = requirement (binds the contractor)
 2. **Should** = goal (leaves decision to contractor; avoid using this word)
 3. **May** = allowable action (leaves decision to contractor; avoid using this word)
 4. **Will** = facts or declaration of intent by the Government (use only in referring to the Government)
 5. **Present tense** (e.g., "is") = descriptive text only (avoid using in requirements statements; use "shall" instead)
 6. **NEVER** use '**must**'
- b. Is the scope of the SOW clearly defined? Is it clear what you are buying?
- c. Is the flow and organizational structure of the document logical and understandable? (See LPR 5000.2 "Procurement Initiator's Guide", Section 12 for "helpful hints".) Is the text compatible with the title of the section it's under? Are sub-headings compatible with the subject matter of a heading?
- d. Is the SOW requirement clear and understandable?
 1. Can the sentence only be understood one way?
 2. Will all terminology used have the same meaning to different readers without definition? Has any terminology for which this is not the case been defined in the SOW? (e.g., in a Definitions section or Glossary.)

3. Is it free from indefinite pronouns (“this”, “that”, “these”, “those”) without clear antecedents? (e.g., replace statements such as “These shall be inspected on an annual basis.” with “The fan blades shall be inspected on an annual basis.”)
4. Is it stated concisely?
- e. Have all redundant requirements been removed? Redundant requirements can reduce clarity, increase ambiguity, and lead to contradictions.
- f. Is the requirement consistent with other requirements in the SOW, without contradicting itself, without using the same terminology with different meanings, without using different terminology for the same thing?
- g. If the SOW includes the delivery of a product (as opposed to just a services SOW):
 1. Are the technical product requirements in a separate section or attachment, apart from the activities that the contractor is required to perform? The intent is to clearly delineate between the technical product requirements and requirements for activities the contractor is to perform. (E.g., separate SOW statements “The contractor shall” from technical product requirement statements such as “The system shall” and “The software shall”.)
 2. Are references to the product and its sub-elements in the SOW at the level described in the technical product requirements?
 3. Is the SOW consistent with and does it use the same terminology as the technical product requirements?
- h. Is the SOW requirement free of ambiguities? Make sure the SOW requirement is free of vague terms. (For example, “as appropriate”, “any”, “either”, “etc.”, “and/or”, “support”, “necessary”, “but not limited to”, “be capable of”, “be able to”)?
- i. Is the SOW requirement verifiable? Make sure the SOW requirement is free of unverifiable terms. For example, “flexible”, “easy”, “sufficient”, “safe”, “ad hoc”, “adequate”, “accommodate”, “user-friendly”, “usable”, “when required”, “if required”, “appropriate”, “fast”, “portable”, “light-weight”, “small”, “large”, “maximize”, “minimize”, “optimize”, “sufficient”, “robust”, “quickly”, “easily”, “clearly”, other “ly” words, other “ize” words.
- j. Is the SOW requirement free of implementation constraints? SOW requirements should state WHAT the contractor is to do, NOT HOW they are to do it. For example, “The Contractor shall design the XYZ flight software” states WHAT the contractor is to do, while “The Contractor shall design the XYZ software using object-oriented design” states HOW the contractor is to implement the activity of designing the software. In addition, too low a level of decomposition of activities can result in specifying how the activities are to be done, rather than what activities are to be done.
- k. Is the SOW requirement stated in such a way that compliance with the requirement is verifiable? Does a means exist to measure or otherwise assess its accomplishment? Can a method for verifying compliance with the requirement be defined (e.g., described in a Quality Assurance Surveillance Plan)?
- l. Is the background material clearly labeled as such (i.e., included in the background section of the SOW if one is used)?
- m. Are the assumptions able to be validated and restated as requirements? If not, the assumptions should be deleted from the SOW. Assumptions should be recorded in a document separate from the SOW.
- n. Is the SOW complete, covering all of the work the contractor is to do?
 1. Are all of the activities necessary to develop the product included? (E.g., system, software, and hardware activities for the following: requirements, architecture, and design development; implementation and manufacturing; verification and validation; integration testing and qualification testing.)
 2. Are all safety, reliability, maintainability (e.g., mean time to restore), availability, quality assurance, and security requirements defined for the total life of the contract?
 3. Does the SOW include a requirement for the contractor to have a quality system (e.g., ISO certified), if one is needed?
 4. Are all of the necessary management and support requirements included in the SOW? (For example, project management; configuration management; systems engineering; system integration and test; risk management; interface definition and management; metrics collection, reporting, analysis and use; acceptance testing; NASA Independent Verification and Validation support tasks.)
 5. Are clear Performance Standards included and sufficient to measure contractor performance? (e.g., systems, software, hardware, and service performance standards for the following: schedule, progress, size, stability, cost, resources, and defects.) See *Guidance on System and Software Metrics for Performance-Based Contracting* at: http://sw-eng.larc.nasa.gov/docs/statements_of_work.html for more information and examples on Performance Standards.
 6. Are all of the necessary service activities included? (For example, transition to operations, operations, maintenance, database administration, system administration, data management.)
 7. Are all of the Government surveillance activities included? (For example, project management meetings; decision points; requirements and design peer reviews for systems, software, and hardware; demonstrations; test readiness reviews; other desired meetings (e.g., Technical Interchange Meetings);

collection and delivery of metrics for systems, software, hardware, and services (e.g. to provide visibility into development progress and cost); electronic access to technical and management data; access to subcontractors and other team members for the purposes of communication.)

8. Are the Government requirements for contractor inspection and testing addressed, if necessary?
9. Are the requirements for contractor support of Government acceptance activities addressed, if necessary?
- o. Does the SOW only include contractor requirements? It should not include Government requirements.
- p. Does the SOW give the contractor full management responsibility and hold them accountable for the end result?
- q. Is the SOW sufficiently detailed to permit a realistic estimate of cost, labor, and other resources required to accomplish each activity?
- r. Are all deliverables identified (e.g., status, financial, product deliverables)? The following are examples of deliverables that are sometimes overlooked: management and development plans; technical progress reports that identify current work status, problems and proposed corrective actions, and planned work; financial reports that identify costs (planned, actual, projected) by category (e.g., software, hardware, quality assurance); products (e.g., source code, Maintenance/User Manual, test equipment); and discrepancy data (e.g., defect reports, anomalies). All deliverables should be specified in a separate document except for technical deliverables which should be included in the SOW (e.g. hardware, software, prototypes, etc.).
- s. Does each technical and management deliverable track to a paragraph in the SOW? Each deliverable should have a corresponding SOW requirement for its preparation (e.g., the SOW identifies the title of the deliverable in parenthesis after the task requiring the generation of the deliverable).
- t. Are all reference citations complete?
 1. Is the complete number, title, and date or version of each reference specified?
 2. Does the SOW reference the standards and other compliance documents in the proper SOW paragraphs?
 3. Is the correct reference document cited and is it referenced at least once?
 4. Is the reference document either furnished with the SOW or available at a location identified in the SOW?
 5. If the referenced standard or compliance document is only partially applicable, does the SOW explicitly and unambiguously reference the portion that is required of the contractor?

References Section

- 1 Langley Management System Center Procedure (LMS-CP) 4501, Procurement Process Overview
- 2 Langley Procedural Requirements (LPR) 5000.2, Procurement Initiator's Guide